

Flood stages during December, 1921.

River and station.	Flood stage.	Above flood stages—dates.		Crest.	
		From—	To—	Stage.	Date.
GREAT LAKES DRAINAGE.					
Grand:	Feet.			Feet.	
Grand Rapids, Mich.....	11.0	21	21	11.2	21
MISSISSIPPI DRAINAGE.					
Ohio:					
Marietta, Ohio.....	33.0	(*)	1	34.0	1
Point Pleasant, W. Va.....	40.0	(*)	2	43.4	1
Do.....	40.0	25	27	43.9	25
Dam No. 29, Ky.....	50.0	1	1	50.5	1
Do.....	50.0	26	27	52.5	26
Dam No. 30, Ky.....	50.0	26	28	52.2	26
Portsmouth, Ohio.....	50.0	26	28	53.5	27
Maysville, Ky.....	50.0	26	28	52.3	27
Cincinnati, Ohio.....	50.0	25	30	56.1	27
Dam No. 35, Ky.....	45.0	26	29	50.3	27
Madison, Ind.....	46.0	26	29	47.9	28
Louisville, Ky.....	28.0	26	30	32.3	28
Cloverport, Ky.....	40.0	25	(†)	46.9	29
Henderson, Ky.....	33.0	1	10	37.5	7
Do.....	33.0	26	(†)	41.2	31
Evansville, Ind.....	35.0	(*)	10	39.6	6
Do.....	35.0	26	(†)	43.1	30
Mount Vernon, Ind.....	35.0	2	10	38.8	7
Do.....	35.0	27	(†)	42.5	31
Shawneetown, Ill.....	35.0	1	11	39.6	8
Do.....	35.0	27	(†)	43.2	31
Monongahela:					
Lock No. 15, W. Va.....	22.0	24	25	27.2	24
Lock No. 10, W. Va.....	25.0	24	24	27.0	24
Lock No. 7, Pa.....	30.0	24	25	36.4	24
Lock No. 4, Pa.....	31.0	25	25	38.8	25
Little Kanawha:					
Glenville, W. Va.....	23.0	24	24	26.4	24
Creston, W. Va.....	20.0	24	24	21.0	24
Walhonding:					
Walhonding, Ohio.....	8.0	25	25	8.4	25
Hocking:					
Athens, Ohio.....	17.0	24	26	20.9	25
Scioto:					
Circleville, Ohio.....	10.0	25	26	12.0	25
Chillicothe, Ohio.....	14.0	25	26	14.7	26
Licking:					
Farmers, Ky.....	25.0	25	25	25.6	25
Falmouth, Ky.....	28.0	24	26	40.8	24
South Fork of Licking:					
Cynthiana, Ky.....	20.0	24	24	22.6	24
Green:					
Lock No. 4, Ky.....	33.0	(*)	2	38.9	1
Lock No. 2, Ky.....	34.0	1	8	37.0	5
Do.....	34.0	28	(†)	35.8	30
Wabash:					
Vincennes, Ind.....	14.0	1	3	16.0	1
Mount Carmel, Ill.....	15.0	(*)	9	21.3	1
Do.....	15.0	25	(†)	20.4	31
White:					
Decker, Ind.....	18.0	(*)	2	19.5	1
Do.....	18.0	5	7	18.5	6
Do.....	18.0	26	(†)	22.7	31
East Fork of White:					
Shoals, Ind.....	20.0	25	(†)	28.1	29
Williams, Ind.....	10.0	26	(†)	17.3	28

* Continued from November, 1921. † Continued into January, 1922.

Flood stages during December, 1921—Continued.

River and station.	Flood stage.	Above flood stages—dates.		Crest.	
		From—	To—	Stage.	Date.
MISSISSIPPI DRAINAGE—continued.					
<i>West Fork of White:</i>	<i>Feet.</i>			<i>Feet.</i>	
Elliston, Ind.....	19.0	3	3	19.1	3
Do.....	19.0	25	28	22.8	27
<i>Illinois:</i>					
Peru, Ill.....	14.0	(*)	(†)	16.6	19
Henry, Ill.....	7.0	22	(†)	9.1	27, 28
Peoria, Ill.....	16.0	1	(†)	17.6	24
Havana, Ill.....	14.0	4	15	14.4	7-10
Do.....	14.0	21	29	14.4	25-26
Beardstown, Ill.....	12.0	(*)	(†)	14.0	6-11
<i>Williamette:</i>					
Eugene, Oreg.....	10.0	1	3	14.3	2
Albany, Oreg.....	20.0	2	4	23.0	2
Salem, Oreg.....	20.0	2	3	21.2	3
Oregon City, Oreg.....	12.0	2	5	13.9	4
Portland, Oreg.....	15.0	2	5	16.3	4
<i>Santiam:</i>					
Jefferson, Oreg.....	10.0	(*)	2	13.0	1

* Continued from November, 1921.

† Continued into January, 1922.

MEAN LAKE LEVELS DURING DECEMBER, 1921.

By UNITED STATES LAKE SURVEY.

[Detroit, Mich., Jan. 5, 1922.]

The following data are reported in the "Notice to Mariners" of the above date:

Data.	Lakes.*			
	Superior.	Michigan and Huron.	Erie.	Ontario.
Mean level during December, 1921:	Feet. 601.99	Feet. 579.54	Feet. 571.71	Feet. 244.83
Above mean sea level at New York.....				
Above or below—				
Mean stage of November, 1921.....	-0.21	-0.10	-0.09	-0.02
Mean stage of December, 1920.....	-0.26	-0.56	-0.18	-0.57
Average state for December, last 10 years.....	-0.39	-0.62	-0.09	-0.68
Highest recorded December stage.....	-1.14	-3.04	-1.82	-2.78
Lowest recorded December stage.....	+0.79	+0.54	+0.85	+1.40
Average relation of the December level to:				
November level.....		-0.10	-0.10	-0.10
January level.....		+0.20	+0.20	+0.10

* Lake St. Clair's level: In December, 574.58 feet.

EFFECT OF WEATHER ON CROPS AND FARMING OPERATIONS, DECEMBER, 1921.

By J. WARREN SMITH, Meteorologist.

The month of December, 1921, was generally mild in all sections of the country, except in the Northeast and far Northwest, where the temperatures averaged below normal. It was mostly favorable for outdoor work, especially in Central and Southern States and much plowing was accomplished in the South. There was a serious lack of moisture in the central and southern Great Plains area and parts of the Southwest, but generous rains in California the latter part of the month were very beneficial in that State, while at the same time needed rains occurred in the Southeast. Corn husking made generally good progress and at the close of the month corn was about all gathered in the principal producing States, although floods did some damage to the crop in fields in portions of the Ohio Valley.

There was a general absence of snow cover during most of the month in the principal winter wheat States, but there was not much damage reported from alternate freezing and thawing, as temperatures remained com-

paratively uniform. Fall-sown grains continued in satisfactory condition east of the Mississippi River, but the continued lack of moisture was harmful in the Great Plains area from Nebraska southward and wheat showed a steady deterioration in most of that section.

Hardy truck crops in the South suffered no material frost damage during the month, but tender vegetation was seriously injured in some southern localities the first half. Precipitation in the east Gulf States favorably affected truck in that area, but it continued too dry in the Southwest. Cane harvest made good progress in Louisiana, and the weather was favorable for stubble and fall planted cane in that State, while it was ideal for truck in the Imperial Valley of California.

The mild, open weather was favorable for stock in the Central and Eastern States, and considerable grazing was possible. It was also favorable for range and stock in the West except where drought prevailed in the Southwest. Considerable feeding was necessary in the far Northwest

on account of snow-covered range. Stock in general continued in satisfactory condition.

Heavy damage was done to citrus fruits in California by high winds the first part of the month, while frost did considerable harm to new foliage in that State. Navel oranges colored nicely, however, and a generally good crop of lemons was being gathered, while citrus ripened well in Florida. Strawberries did well also in the latter State and some were going to market during the last part of the month, when citrus fruits were moving in large quantities.

MONTHLY AND ANNUAL TEMPERATURE AND PRECIPITATION ANOMALIES, 1921.

Below are given the temperature and precipitation anomalies for the year 1921 by climatic districts published month by month in Table 1 of the REVIEW, thus reviving a practice that was abandoned in 1909.

The temperature table shows at a glance that the year just closed was especially warm over the greater portion of the United States and indeed was warmer than the normal in all parts of the country. The Pacific Coast States alone had the least excess; the Missouri Valley had the greatest.

Precipitation on the average of the year was almost universally deficient by small amounts, the Ohio Valley and Tennessee, the Upper Mississippi Valley, the north Pacific coast and the south Pacific coast only showing a small positive anomaly. The deficit was greatest in Florida, the East Gulf and South Atlantic States, New England, and California.

Monthly temperature departures, 1921 (degrees and tenths).

Stations.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
New England.....	+ 3.1	+ 2.8	+ 8.7	+5.3	+0.9	+0.7	+2.5	-0.6	+4.5	+1.8	-0.4	-1.6	+2.3
Middle Atlantic States.....	+ 3.3	+ 3.9	+10.6	+5.8	-0.7	+1.4	+2.7	-1.1	+5.7	+0.5	+2.4	+0.6	+2.9
South Atlantic States.....	+ 2.7	+ 2.6	+ 9.1	+2.1	-2.1	+1.6	-0.2	0.0	+4.3	-0.2	+4.5	+4.0	+2.5
Florida Peninsula.....	+ 1.8	+ 0.7	+ 3.9	+0.8	-2.1	-0.1	-0.9	0.0	+0.7	+0.4	+2.3	+3.4	+0.9
East Gulf States.....	+ 5.1	+ 2.4	+ 8.6	-0.8	-1.2	+2.5	+0.9	+1.7	+6.7	-0.5	+4.6	+4.8	+2.9
West Gulf States.....	+ 7.4	+ 3.7	+ 7.4	-1.9	+0.3	+0.2	+0.4	+2.2	+5.1	+0.9	+5.6	+4.8	+3.0
Ohio Valley and Tennessee.....	+ 5.4	+ 3.9	+10.5	+2.8	+0.6	+3.4	+3.4	-0.2	+5.7	-0.4	+3.3	+2.7	+3.4
Lower Lake Region.....	+ 4.9	+ 5.2	+10.1	+7.5	+2.1	+2.2	+5.9	-0.3	+5.0	+0.6	-0.3	+0.7	+3.6
Upper Lake Region.....	+ 7.3	+ 6.5	+ 7.0	+6.6	+3.4	+5.3	+7.6	+0.6	+5.3	+1.9	-1.4	+0.8	+4.2
North Dakota.....	+11.8	+12.9	+ 3.8	+1.1	+0.6	+5.6	+2.6	+1.2	+0.5	+5.2	-3.0	+5.0	+3.9

Monthly temperature departures, 1921 (degrees and tenths)—Continued.

Stations.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
Upper Mississippi Valley.....	+ 9.5	+ 8.7	+ 9.0	+3.4	+2.6	+5.0	+4.5	+0.5	+4.3	+2.1	0.0	+3.1	+4.4
Missouri Valley.....	+11.6	+11.5	+ 9.2	+2.0	+1.3	+4.7	+2.7	+1.1	+3.8	+3.9	+0.4	+4.3	+4.7
Northern Slope.....	+ 7.0	+ 8.4	+ 4.8	-0.9	+0.2	+3.0	+1.4	+0.9	-2.4	+6.1	+0.8	-0.3	+2.4
Middle Slope.....	+ 7.8	+ 7.6	+ 6.9	-1.0	+1.7	+0.7	+0.8	+2.0	+4.2	+3.9	+3.0	+3.1	+3.4
Southern Slope.....	+ 6.2	+ 3.9	+ 5.4	-1.4	+0.2	-1.7	-0.8	+2.0	+5.4	+3.9	+4.8	+5.4	+2.8
Southern Plateau.....	+ 1.4	+ 2.4	+ 3.1	-2.3	-2.4	-0.5	-0.3	-0.3	+1.7	+3.0	+3.0	+3.9	+1.1
Middle Plateau.....	+ 4.1	+ 4.7	+ 3.8	-2.1	-0.5	+1.9	+1.1	-0.5	-0.7	+4.6	+3.7	+3.7	+2.0
Northern Plateau.....	+ 4.5	+ 2.6	+ 3.0	-3.1	0.0	+2.0	+0.7	+1.4	-5.0	+4.9	+2.8	-0.6	+1.1
North Pacific coast.....	+ 1.4	+ 2.6	+ 1.2	-0.9	-0.7	+1.6	-1.4	-0.4	-0.2	+2.4	+2.4	-2.2	+0.5
Middle Pacific coast.....	- 1.1	+ 1.0	+ 1.3	-0.6	-2.3	+1.8	+0.8	-0.7	+0.7	+1.7	+1.1	+1.4	+0.4
Southern Pacific coast.....	- 0.2	+ 1.8	+ 2.0	-0.8	-2.8	+0.6	+1.8	-0.3	+0.3	+2.6	+2.3	+3.4	+0.9

Precipitation departures, 1921 (inches and tenths.)

Stations.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
New England.....	-1.5	-0.6	-1.3	+0.5	-0.6	-0.4	+1.2	-1.7	-1.2	-1.6	+1.8	-1.2	-0.6
Middle Atlantic States.....	-1.1	-0.6	-1.2	0.0	+0.4	-1.5	-0.7	-1.0	-1.0	+1.6	+1.0	-1.1	-0.4
South Atlantic States.....	-0.8	-1.0	-2.5	-0.9	+0.7	-2.0	+2.4	-1.8	-1.9	-1.4	-0.4	-2.0	-1.0
Florida Peninsula.....	-1.5	-1.0	-0.1	-0.2	+1.2	-3.2	+0.2	-3.6	-4.6	+5.6	-0.6	-1.2	-0.8
East Gulf States.....	-2.3	-0.6	-0.8	+1.1	-1.1	-1.5	+0.2	-0.6	-1.4	-0.9	0.0	-1.3	-0.8
West Gulf States.....	-0.7	-0.7	+1.3	+0.9	-1.6	+1.7	-0.9	-1.0	+2.3	-2.1	-1.3	-1.2	-0.3
Ohio Valley and Tennessee.....	-1.1	-0.2	+1.0	+0.4	-1.2	-1.2	-0.9	+1.3	+1.2	-0.4	+2.7	+0.4	+0.2
Lower Lake.....	-1.6	-0.4	+1.1	+0.6	-1.2	-1.4	-0.6	0.0	+0.1	-0.2	+1.1	-1.4	-0.3
Upper Lake.....	-1.1	-0.7	+1.0	+1.5	-1.7	-1.4	-0.4	+1.4	+0.6	0.0	-0.1	+0.7	0.0
North Dakota.....	-0.4	-0.2	+0.2	+0.1	-0.4	-0.5	+0.1	+0.4	+1.6	-0.3	-0.2	-0.2	0.0
Upper Mississippi Valley.....	-0.8	-0.9	+0.8	+1.3	-1.0	-1.0	-1.5	+1.1	+2.9	-0.5	+0.5	+0.2	+0.1
Missouri Valley.....	-0.1	-0.6	+0.4	-0.4	-0.1	0.0	-0.5	-1.2	+2.0	-0.5	-0.7	-0.5	-0.2
Northern Slope.....	-0.1	-0.4	-0.2	-0.2	+0.3	-0.2	-0.6	-0.2	-0.3	-0.6	+0.4	+0.2	-0.2
Middle Slope.....	+0.2	-0.3	-0.6	+0.3	-2.4	+1.2	+0.3	+0.1	-0.1	-1.0	-0.7	-0.2	-0.3
Southern Slope.....	+0.1	+1.4	+0.2	-1.1	-1.2	+3.5	-0.7	-0.2	-2.0	-1.8	-1.1	-0.8	-0.3
Southern Plateau.....	-0.1	-0.5	-0.3	-0.2	+0.3	+0.4	+0.1	+0.6	+0.4	-0.2	-0.5	+0.4	0.0
Middle Plateau.....	-0.3	-0.7	-0.7	-0.5	+0.6	-0.2	+0.2	+0.6	-0.5	0.0	-0.4	+0.7	-0.1
Northern Plateau.....	0.0	-0.2	-0.4	0.0	-0.1	-0.6	-0.2	0.0	-0.1	-0.6	+1.2	-0.5	-0.1
North Pacific coast.....	+1.0	+1.7	-1.3	-0.4	-0.8	+0.3	-0.6	+0.5	+0.6	+1.7	+1.5	-1.8	+0.2
Middle Pacific coast.....	+1.3	-2.0	-3.8	-1.6	+0.1	-0.1	0.0	0.0	-0.4	-0.7	-0.7	+0.8	-0.6
Southern Pacific coast.....	+0.7	-1.4	-0.8	-0.8	+1.4	-0.1	0.0	0.0	+0.4	-0.5	-1.0	+4.8	+0.2